Harold Metcalf
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Biographical Sketch

Harold Joseph Metcalf was born in Boston, Massachusetts, on June 11, 1940. He was educated in the public schools of Newton, Massachusetts, entered the Massachusetts Institute of Technology in 1958, and was awarded a Bachelor of Science with major in Physics from MIT in June, 1962. He entered the graduate school of Brown University in 1962 and completed the requirements for the Ph.D. degree in physics in June, 1967. In June, 1963 he was married to the former Marilyn Sonis of Dorchester, Mass. Their three children were born in 1964, 1967, and 1973.

Summary of Professional Experience

1962-1964	Teaching Assistant, Brown University
1964-1967	Research Assistant, Brown University
July 1967	Lecturer, Latin American School of Physics, Santiago, Chile
1967-1968	Research Associate, Brown University
1968-1970	Research Associate, S. U. N. Y., Stony Brook
1970-1974	Assistant Professor, S. U. N. Y., Stony Brook
1974-1977	Associate Professor, S. U. N. Y., Stony Brook
1977-1978	Visiting Associate Professor, M. I. T.
1978-1983	Associate Professor, S. U. N. Y., Stony Brook
1981-1983	Summer Consultant: Center for Abs. Phys. Quant., N. B. S.
1983-present	Professor of Physics, S. U. N. Y., Stony Brook
1985-1986	Visiting Professor, Ben Gurion Univ., Beer Sheva, Israel (Winter)
1986-1987	Visiting Professor, Ecole Normale Superieure, Paris, France
1988-1994	Director of Graduate Studies, Physics Dept., S. U. N. Y., Stony Brook
May 1991	Visiting Professor, Beijing Inst. for Modern Physics, Beijing, China
June 1992	Visiting Professor, R.U. Utrecht, Netherlands
1993-1994	Visiting Professor, Ecole Normale Superieure, Paris, France
June 1994	Visiting Professor, R.U. Utrecht, Netherlands
1997-1999	Alexander von Humboldt Fellow, Univ. at Konstanz and at Bonn, Germany
1999-present	Distinguished Teaching Professor, S. U. N. Y., Stony Brook
2000	Visiting Professor, University of Innsbrück

Member: A.P.S., O.S.A., A.A.P.T., L.I.P.T.A.
Life Member and Fellow of American Physical Society
Fellow of Optical Society of America
Recipient of Chancellor's Award for Excellence in Teaching, 1974
Faculty Advisor to S. P. S. (Outstanding chapter awards, 1978, 1985 and 1986)

Principal Research Interests

1. Precision spectroscopy of simple atoms and molecules. Most recent work in triplet helium and the OH free radical.

2. Quantum beats and atomic coherence. Most recent work in OH, He, and Na. Detection by fluorescence as well as by photoionization.

3. Zeeman spectroscopy, especially level crossing spectroscopy.

4. Stark spectroscopy of Rydberg atoms. Work in field ionization of Na in states degenerate with the continuum. Interference narrowing, precision calibration of electric fields.

5. Deceleration and cooling of atoms with laser light; magnetic trapping of neutral atoms. Experiments with Na at NBS, Cs in Paris, Ne in Holland, and Rb and He at Stony Brook. Quantized states of atomic motion. Also, theory at Stony Brook.

Significant Publications of Harold Metcalf

1. H. Metcalf, **Topics in Classical Biophysics**, Prentice Hall Inc., Englewood Cliffs, NJ 07632 (1980). A textbook for second year students.

2. J. Prodan, W. Phillips, and H. Metcalf, "Laser Production of a Very Slow Monoenergetic Atomic Beam", Phys. Rev. Lett. **49**, 1149 (1982).

3. J. Liu, P. McNicholl, D. Harmin, T. Bergeman, J. Ivri, and H. Metcalf, "Interference Narrowing at Crossings of Sodium Stark Resonances", Phys. Rev. Lett. **55**, 189 (1985).

4. A. Migdall, J. Prodan, W. Phillips, T. Bergeman, and H. Metcalf, "First Observation of Magnetically Trapped Neutral Atoms", Phys. Rev. Lett. **54**, 2596 (1985).

5. P. Lett, R. Watts, C. Westbrook, W. Phillips, P. Gould, and H. Metcalf, "Observation of Atoms Laser Cooled below the Doppler Limit", Phys. Rev. Lett. **61**, 169 (1988).

6. B. Sheehy, S-Q. Shang, P. van der Straten, S. Hatamian, and H. Metcalf, "Magnetic Field Induced Laser Cooling Below the Doppler Limit", Phys. Rev. Lett. **64**, 858 (1990).

7. R. Gupta, C. Xie, S. Padua, H. Batelaan and H. Metcalf, "Bichromatic Laser Cooling in a Three Level System", Phys. Rev. Lett. **71**, 3087 (1993).

8. M. Doery, M. Widmer, J. Bellanca, E. Vredenbregt, T. Bergeman and H. Metcalf, "Energy Bands and Bloch States in 1-D Laser Cooling", Phys. Rev. Lett. **72**, 2546 (1994).

9. D. Meacher, D. Boiron, C. Salomon, G. Grynberg, and H. Metcalf, "Method of Velocimetry of Cold Atoms", Phys. Rev. **A50**, R1992 (1994).

10. P. van der Straten and H. Metcalf, "Laser Cooling and Trapping of Neutral Atoms", Physics Reports **244**, 203 (1994). A major review article covering the entire field.

11. H. Batelaan, S. Padua, D-H. Yang, C. Xie, R. Gupta, and H. Metcalf, "Slowing of Rb Atoms with Isotropic Light", Phys. Rev. **A49**, 2780 (1994).

12. M. Widmer, M. Doery, M-J. Bellanca, W. Buell, T. Bergeman, and H. Metcalf, "High Velocity Dark States in Velocity Selective Coherent Population Trapping", Phys. Rev. **A53**, 946 (1996).

13. H. Metcalf "Laser Cooling as a Form of Optical Pumping in the Quantum Domain of Atomic Motion", Physica Scripta **T70**, 57 (1997).

14. **Laser Cooling and Trapping**, (with Peter van der Straten). A graduate level textbook covering cooling and trapping, theory and applications. Springer Verlag, NY, 1999